1. For the scenario below, use the model for the volume of a cylinder as $V = \pi r^2 h$.

   Pringles wants to add 50 percent more chips to their cylinder cans and minimize the design change of their cans. They've decided that the best way to minimize the design change is to increase the radius and height by the same percentage. What should this increase be?

   A. About 22 percent

   B. About 14 percent

   C. About 4 percent

   D. About 25 percent

   E. None of the above

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2. For the scenario below, use the model for the volume of a cylinder as $V = \pi r^2 h$.

   Pringles wants to add 24 percent more chips to their cylinder cans and minimize the design change of their cans. They've decided that the best way to minimize the design change is to increase the radius and height by the same percentage. What should this increase be?

   A. About 11 percent

   B. About 7 percent

   C. About 12 percent

   D. About 3 percent

   E. None of the above

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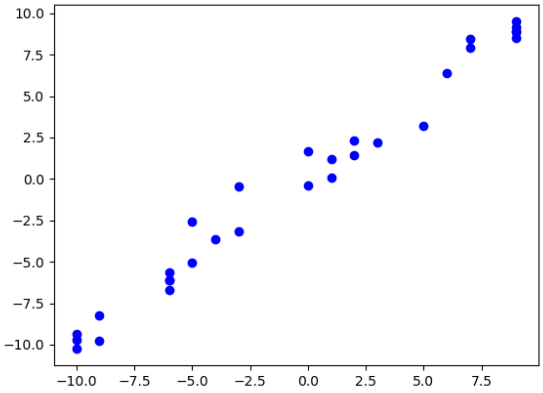
3. Determine the appropriate model for the graph of points below.



A. Exponential model

B. Linear model

C. Logarithmic model

D. Non-linear Power model

E. None of the above

---

4. Solve the modeling problem below, if possible.

A new virus is spreading throughout the world. There were initially 3 many cases reported, but the number of confirmed cases has doubled every 1 days. How long will it be until there are at least 1000000 confirmed cases?

A. About 19 days

B. About 8 days

C. About 7 days

D. About 13 days

E. There is not enough information to solve the problem.

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5. Solve the modeling problem below, if possible.

In CHM2045L, Brittany created a 29 liter 15 percent solution of

chemical χ using two different solution percentages of chemical χ. When she went to write her lab report, she realized she forgot to write the amount of each solution she used! If she remembers she used 15 percent and 35 percent solutions, what was the amount she used of the 35 percent solution?

A. $0.00 liters$

B. $29.00 liters$

C. $14.50 liters$

D. $1.29 liters$

E. There is not enough information to solve the problem.

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6. Using the situation below, construct a linear model that describes the cost of the coffee beans $C(h)$ in terms of the weight of the high-quality coffee beans h.

Veronica needs to prepare 220 of blended coffee beans selling for \$3.06 per pound. She has a high-quality bean that sells for \$4.31 a pound and a low-quality bean that sells for \$2.47 a pound.

A. $C(h) = -1.84h + 948.20$

B. $C(h) = 4.31h$

C. $C(h) = 3.39h$

D. $C(h) = 1.84h + 543.40$

E. None of the above.

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7. For the information below, construct a linear model that describes the total time T spent on the path in terms of the distance of a particular part of the path *if we know that all parts of the path are equal length.*

A bicyclist is training for a race on a hilly path. Their bike keeps track of their speed at any time, but not the distance traveled. Their speed traveling up a hill is 7 mph, 10 mph when traveling down a hill, and 8 mph when traveling along a flat portion.

A. $0.368D$

B. $25.000D$

C. $560.000D$

D. The model can be found with the information provided, but isn't options 1-3

E. The model cannot be found with the information provided.

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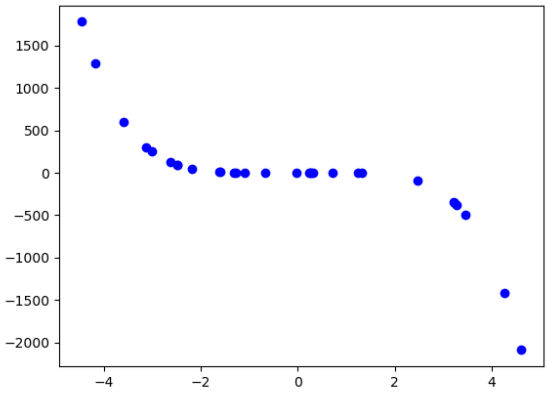
8. Determine the appropriate model for the graph of points below.



A. Exponential model

B. Linear model

C. Logarithmic model

D. Non-linear Power model

E. None of the above

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9. Solve the modeling problem below, if possible.

A new virus is spreading throughout the world. There were initially 8 many cases reported, but the number of confirmed cases has quadrupled every 5 days. How long will it be until there are at least 1000 confirmed cases?

A. About 18 days

B. About 12 days

C. About 25 days

D. About 10 days

E. There is not enough information to solve the problem.

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10. Solve the modeling problem below, if possible.

In CHM2045L, Brittany created a 22 liter 26 percent solution of chemical χ using two different solution percentages of chemical χ. When she went to write her lab report, she realized she forgot to write the amount of each solution she used! If she remembers she used 7 percent and 31 percent solutions, what was the amount she used of the 31 percent solution?

A. $16.81 liters$

B. $17.42 liters$

C. $4.58 liters$

D. $11.00 liters$

E. There is not enough information to solve the problem.
